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# ECONOMIC AND PRODUCTION IMPLICATIONS OF AN ASSUMED SOVIET GUIDED MISSILE PROGRAM 1954 to 1963

(OIR CONTRIBUTION BASED ON THE COORDINATED INTELLIGENCE ASSUMPTIONS FOR THE SPECIAL NSC PROJECT, 1959)

CIA/RR IP-59-16

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## FOREWORD

The set of tables in this contribution provide representative costs and production schedules consistent with an assumed Soviet guided missile program based on the Coordinated Intelligence Assumptions for the NESC Project, 1959.

The methodology used and the limitations prescribed in CIA/RR IP-634 dated 8 September 1958 remain unchanged in the preparation of this contribution.

TABLE I

Number of Guided Missiles In Operational Stockpile, by Year, 1954-1963
(Numbers of Missiles, Cumulative at End of Year)

| NIE 11-5-58 Designation | Mid-1963 Stockpile | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 | 1960 | 1961 | 1962 | 1963 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Surface-to-Surface Ballistic** | | | | | | | | | | | |
| SS-1* (100 n.m.) | 3,000 | 100 | 200 | 450 | 850 | 1,250 | 2,000 | 2,750 | 3,000 | 3,000 | 3,000 |
| SS-2* (200 n.m.) | 1,500 | 40 | 150 | 300 | 450 | 600 | 1,050 | 1,500 | 1,500 | 1,500 | 1,500 |
| SS-3* (300 n.m.) | 750 | 30 | 100 | 150 | 200 | 250 | 450 | 650 | 750 | 750 | 750 |
| SS-4 (700 n.m.) | 400 | | | 10 | 80 | 190 | 300 | 400 | 400 | 400 | 400 |
| SS-5 (1,100 n.m.) | 500 | | | | | 10 | 80 | 200 | 320 | 440 | 560 |
| SS-6 (ICBM) | 750 | | | | | | 20 | 125 | 375 | 625 | 875 |
| **Surface-to-Surface Naval** | | | | | | | | | | | |
| SS-7 (200 n.m. Submarine) | 250 | | | 4 | 8 | 20 | 64 | 155 | 250 | 250 | 250 |
| SS-8 (1,000 n.m. Submarine) | 150 | | | | | | | | | 20 | 360 |
| **Air-to-Surface** | | | | | | | | | | | |
| AS-1* (55 n.m.) | 450 | | | | 112 | 337 | 450 | 450 | 450 | 450 | 450 |
| AS-2* (250 n.m.) | 700 | | | | | | | | 175 | 525 | 875 |
| **Air-to-Air** | | | | | | | | | | | |
| AA-1* | -0- | | | 1,000 | 2,900 | 3,800 | 3,800 | 3,600 | 1,600 | | |
| AA-2 | 12,000 | | | 1,000 | 2,900 | 4,800 | 6,700 | 8,600 | 10,500 | 12,000 | 12,000 |
| AA-3 | 14,000 | | | | | 2,900 | 13,100 | 23,500 | 23,500 | 17,600 | 10,400 |
| AA-4 | 4,200 | | | | | | | 1,400 | 4,200 | 4,200 | 4,200 |

TABLE I
(Continued)

Number of Guided Missiles in Operational Stockpile, by Year, 1954-1963
(Numbers of Missiles, Cumulative at End of Year)

| NIE 11-5-58 Designation | Mid-1963 Stockpile | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 | 1960 | 1961 | 1962 | 1963 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Surface-to-Air (Ground-Launched)** | | | | | | | | | | | |
| SA-1 (Moscow Sites) | -0- | 2,640 | 7,900 | 13,400 | 12,900 | 8,600 | 2,600 | | | | |
| SA-2 | 17,500 | | | | 527 | 4,618 | 9,899 | 15,178 | 20,459 | 21,750 | 13,750 |
| SA-3* | 22,500 | | | | | | | 3,700 | 11,200 | 18,250 | 26,250 |
| SA-4* | 27,000 | | | | | | | | 6,800 | 20,400 | 34,000 |
| **Surface-to-Air (Naval-Launched)** | | | | | | | | | | | |
| SA-6 (Naval) | 1,300 | | | | | | 150 | 450 | 850 | 1,150 | 1,450 |
| SA-7 (Naval) | 700 | | | | | | | | 100 | 400 | 1,000 |

* As appearing in 1958 assumptions - repeated here as basis for costing.

TABLE II

Number of Operational Units Deployed and Equipped with Missiles, by Year, 1954-1963
(Number of Units, Cumulative at End of Year)

| NIE 11-5-58 Designation | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 | 1960 | 1961 | 1962 | 1963 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Surface-to-Surface Ballistic** | | | | | | | | | | |
| SS-1 (100 n.m.) | 1 | 4 | 9 | 17 | 25 | 40 | 55 | 60 | 60 | 60 |
| SS-2 (200 n.m.) | 1 | 3 | 6 | 9 | 12 | 21 | 30 | 30 | 30 | 30 |
| SS-3 (300 n.m.) | 1 | 2 | 3 | 4 | 5 | 9 | 13 | 15 | 15 | 15 |
| SS-4 (700 n.m.) | | | 2 | 11 | 21 | 32 | 40 | 40 | 40 | 40 |
| SS-5 (1,100 n.m.) | | | | | 2 | 9 | 20 | 32 | 44 | 56 |
| SS-6 (ICBM) | | | | | | 3 | 12 | 37 | 62 | 87 |
| **Surface-to-Surface Naval** | | | | | | | | | | |
| SS-7 (200 n.m. Submarine) | | | 1 | 2 | 4 | 10 | 23 | 36 | 36 | 36 |
| SS-8 (1,000 n.m. Submarine) | | | | | | 1 | 4 | 7 | 10 | 13 |
| **Air-to-Surface** | | | | | | | | | | |
| AS-1 (55 n.m.) | | | | 22 | 67 | 90 | 90 | 90 | 90 | 90 |
| AS-2 (250 n.m.) | | | | | | | | 35 | 105 | 175 |
| **Air-to-Air** | | | | | | | | | | |
| AA-1 | | | 120 | 360 | 480 | 480 | 450 | 200 | | |
| AA-2 | | | 120 | 360 | 600 | 840 | 1,080 | 1,320 | 1,520 | 1,520 |

TABLE II
(Continued)

Number of Operational Units Deployed and Equipped
with Missiles, by Year, 1954-1963
(Number of Units, Cumulative at End of Year)

| NIE 11-5-58 Designation | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 | 1960 | 1961 | 1962 | 1963 |
|---|---|---|---|---|---|---|---|---|---|---|
| AA-3 | | | | | 360 | 1,640 | 2,940 | 2,940 | 2,200 | 1,300 |
| AA-4 | | | | | | | 200 | 600 | 600 | 600 |
| **Surface-to-Air (Ground-Launched)** | | | | | | | | | | |
| SA-1 | 11 | 33 | 56 | 54 | 36 | 11 | | | | |
| SA-2 | | | | 4 | 35 | 75 | 115 | 155 | 165 | 104 |
| SA-3 | | | | | | | 25 | 75 | 125 | 175 |
| SA-4 | | | | | | | | 50 | 150 | 250 |
| **Surface-to-Air (Naval-Launched)** | | | | | | | | | | |
| SA-6 | | | | | | | | | | |
| Destroyers | | | | | | 1 | 7 | 13 | 19 | 25 |
| Cruisers | | | | | | 1 | 1 | 2 | 2 | 2 |
| SA-7 | | | | | | | | | | |
| Cruisers | | | | | | | | 1 | 4 | 10 |

TABLE III

Summary of Offensive Missile Production* and Units Deployed by Missile and Year, 1954-1963

| NIE 11-5-58 Designation | | Monthly Missile Production at Peak Rate | Number of Months at Peak Rate | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 | 1960 | 1961 | 1962 | 1963 | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS-1 (100 n.m.) | Missiles Produced | 60 | 30 | 112 | 288 | 400 | 500 | 500 | 700** | 700 | 400 | | | 3600 |
| | Units Deployed | | | 1 | 3 | 5 | 8 | 8 | 15 | 15 | 5 | | | 60 |
| SS-2 (200 n.m.) | Missiles Produced | 42 | 24 | 50 | 150 | 200 | 200 | 200 | 500** | 500 | | | | 1800 |
| | Units Deployed | | | 1 | 2 | 3 | 3 | 3 | 9 | 9 | | | | 30 |
| SS-3 (350 n.m.) | Missiles Produced | 19 | 30 | 32 | 68 | 75 | 75 | 75 | 225** | 225 | 125 | | | 900 |
| | Units Deployed | | | 1 | 1 | 1 | 1 | 1 | 4 | 4 | 2 | | | 15 |
| SS-4 (700 n.m.) | Missiles Produced | 11 | 39 | | | 24 | 105 | 132 | 132** | 110 | | | | 500 |
| | Units Deployed | | | | | 2 | 9 | 10 | 11 | 8 | | | | 40 |
| SS-5 (1,100 n.m.) | Missiles Produced | 12 | 51 | | | | | 24 | 109** | 144 | 144 | 144 | 144 | 710 |
| | Units Deployed | | | | | | | 2 | 7 | 11 | 12 | 12 | 12 | 56 |
| SS-6 (ICBM) | Missiles Produced | 25 | 36 | | | | | | 40 | 140 | 300 | 300** | 300 | 1080 |
| | Units Deployed | | | | | | | | 3 | 9 | 25 | 25 | 25 | 87 |
| SS-7 (200 n.m. Sub.) | Missiles Produced | 10 | 24 | | | 5 | 5 | 16 | 48 | 116 | 116 | | | 310 |
| | Converted Submarines | | | | | 1 | 1 | 1 | 3 | 4 | 4 | | | 14 |
| | New Conventional Submarines | | | | | | | 1 | 3 | 9 | 9 | | | 22 |

TABLE III
(Continued)

Summary of Offensive Missile Production* and Units Deployed by Missile and Year, 1954-1963

| NIE 11-5-58 Designation | | Monthly Missile Production at Peak Rate | Number of Months at Peak Rate | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 | 1960 | 1961 | 1962 | 1963 | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS-8 (1,000 n.m. Sub.) | Missiles Produced | 40 | 7 | | | | | | | | | 50 | 430 | 480 |
| | Submarines Deployed | | | | | | | | 1 | 3 | 3 | 3 | 3 | 13 |
| AS-1 (55 n.m.) | Missiles Produced | 25 | 18 | | | | 150 | 300 | 150 | | | | | 600 |
| | Aircraft Deployed | | | | | | 22 | 45 | 23 | | | | | 90 |
| AS-2 (250 n.m.) | Missiles Produced | 44 | 24 | | | | | | | | 262 | 525 | 525 | 1312 |
| | Aircraft Deployed | | | | | | | | | | 35 | 70 | 70 | 175 |

* Production figures in this table represent total production which, in addition to operational deliveries (shown in Table I), allows for missiles allocated for static and laboratory tests, production slippage, other degradation of all types and missiles expended for training purposes.

** Change from radar/radio command to all inertial system.

TABLE IV

Summary of Defensive Missile Production and Units Deployed by Missile and Year, 1954-1963

| NIE 11-5-58 Designation | | Monthly Missile Production at Peak Rate | Number of Months at Peak Rate | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 | 1960 | 1961 | 1962 | 1963 | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AA-1 | Missiles Produced | 280 | 18 | | | 1,680 | 3,360 | 1,680 | | | | | | 6,720 |
| | Aircraft Deployed | | | | | 120 | 240 | 120 | | | | | | 480 |
| AA-2 | Missiles Produced | 280 | 72 | | | 1,680 | 3,360 | 3,360 | 3,360 | 3,360 | 3,360 | 2,810 | | 21,290 |
| | Aircraft Deployed | | | | | 120 | 240 | 240 | 240 | 240 | 240 | 200 | | 1,520 |
| AA-3 | Missiles Produced | 1,150 | 24 | | | | | 3,700 | 13,500 | 13,800 | | | | 31,000 |
| | Aircraft Deployed | | | | | | | 360 | 1,280 | 1,300 | | | | 2,940 |
| AA-4 | Missiles Produced | 420 | 12 | | | | | | | 2,500 | 5,000 | | | 7,500 |
| | Aircraft Deployed | | | | | | | | | 200 | 400 | | | 600 |
| SA-1 | Missiles Produced | 580 | 24 | 3,470 | 6,940 | 6,940 | | | | | | | | 17,360 |
| | Units Deployed (Moscow) | | | 11 | 22 | 23 | | | | | | | | 56 |
| SA-2 | Missiles Produced | 560 | 42 | | | | 675 | 5,237 | 6,759 | 6,759 | 6,759 | 1,690 | | 27,879 |
| | Units Deployed | | | | | | 4 | 31 | 40 | 40 | 40 | 10 | | 165 |
| SA-3 | Missiles Produced | 800 | 36 | | | | | | | 4,800 | 9,600 | 9,600 | 9,600 | 33,600 |
| | Units Deployed | | | | | | | | | 25 | 50 | 50 | 50 | 175 |

TABLE IV
(Continued)

Summary of Defensive Missile Production and Units Deployed by Missile and Year, 1954-1963

| NIE 11-5-58 Designation | | Monthly Missile Production at Peak Rate | Number of Months at Peak Rate | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 | 1960 | 1961 | 1962 | 1963 | Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SA-4 | Missiles Produced | 1,450 | 24 | | | | | | | | 8,700 | 17,400 | 17,400 | 43,500 |
| | Units Deployed | | | | | | | | | | 50 | 100 | 100 | 250 |
| SA-6 (Naval) | Missiles Produced | 30 | 54 | | | | | | 300 | 360 | 360 | 360 | 360 | 1,740 |
| | Destroyers Deployed | | | | | | | | 1 | 6 | 6 | 6 | 6 | 25 |
| | Cruisers Deployed | | | | | | | | 1 | | 1 | | | 2 |
| SA-7 (Naval) | Missiles Produced | 60 | 12 | | | | | | | | 120 | 360 | 720 | 1,200 |
| | Cruisers Deployed | | | | | | | | | | 1 | 3 | 6 | 10 |

TABLE V

Comparison of Total Cost of NESC Project 1959 Program and Projected Soviet Military Expenditure by Year, 1954-1963
(Billions of 1957 Dollars)

| | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 | 1960 | 1961 | 1962 | 1963 |
|---|---|---|---|---|---|---|---|---|---|---|
| USSR Military Expenditures | 41.5 | 43.2 | 43.1 | 40.3 | 41.0 | 44.4 | 47.9 | 51.6 | 54.8 | 55.8 |
| NESC 1959 Program | 0.4 | 0.8 | 1.1 | 1.4 | 2.5 | 5.0 | 8.1 | 10.3 | 12.2 | 14.3 |
| NESC 1959 Program as percent of Military Expenditures | 1.0 | 1.9 | 2.6 | 3.5 | 6.1 | 11.3 | 16.9 | 20.0 | 22.3 | 25.6 |

TABLE VI

Total Costs of NESC Project 1959 Program by Category of Missiles
(Billions of 1957 Dollars)

| | Initial Investment | Operating Costs | Total | Percent of Total |
|---|---|---|---|---|
| Surface-to-Air Ground-Launched | 13.0 | 5.4 | 18.4 | 32.7 |
| Surface-to-Air Ship-Launched | 1.8 | 0.4 | 2.2 | 3.9 |
| Air-to-Air | 1.7 | 1.9 | 3.6 | 6.4 |
| Air-to-Surface | 0.5 | 0.5 | 1.0 | 1.8 |
| Surface-to-Surface (up to and including 700 n.m.) | 4.0 | 5.6 | 9.6 | 17.2 |
| Surface-to-Surface Submarine-Launched | 2.5 | 0.3 | 2.8 | 5.0 |
| IRBM (1,100 n.m.) | 3.2 | 1.9 | 5.1 | 9.0 |
| ICBM (5,500 n.m.) | 10.2 | 3.2 | 13.4 | 24.0 |
| TOTAL | 36.9 | 19.2 | 56.1 | 100.0 |

TABLE VII

Yearly Costs of NESC Project 1959 Program, 1954-1963
(Billions of 1957 Dollars)

| | 1954 | 1955 | 1956 | 1957 | 1958 | 1959 | 1960 | 1961 | 1962 | 1963 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Initial Investment | .4 | .7 | .9 | .9 | 1.8 | 3.9 | 6.2 | 7.0 | 7.3 | 7.8 | 36.9 |
| Annual Operating | | .1 | .2 | .5 | .7 | 1.1 | 1.9 | 3.3 | 4.9 | 6.5 | 19.2 |
| TOTAL | .4 | .8 | 1.1 | 1.4 | 2.5 | 5.0 | 8.1 | 10.3 | 12.2 | 14.3 | 56.1 |

TABLE VIII

Total Investment and Operating Costs of NESC
Project 1959 Program by Missile System

| NIE 11-5-58 Designation | Investment Costs | | Operating Costs | | Total Costs | |
|---|---|---|---|---|---|---|
| | Billions 1957 Dollars | Percent of Total | Billions 1957 Dollars | Percent of Total | Billions 1957 Dollars | Percent of Total |
| SS-1 | 1.2 | 3.2 | 0.8 | 4.2 | 2.0 | 3.6 |
| SS-2 | 0.7 | 1.9 | 0.6 | 3.1 | 1.3 | 2.3 |
| SS-3 | 0.4 | 1.1 | 0.7 | 3.6 | 1.1 | 1.9 |
| SS-4 | 1.7 | 4.6 | 3.5 | 18.2 | 5.2 | 9.3 |
| SS-5 | 3.2 | 8.7 | 1.9 | 9.9 | 5.1 | 9.1 |
| SS-6 | 10.2 | 27.7 | 3.2 | 16.7 | 13.4 | 23.9 |
| SS-7 | 0.9 | 2.4 | 0.1 | 0.6 | 1.0 | 1.8 |
| SS-8 | 1.6 | 4.3 | 0.2 | 1.0 | 1.8 | 3.2 |
| AS-1 | 0.2 | 0.5 | 0.3 | 1.6 | 0.5 | 0.9 |
| AS-2 | 0.3 | 0.8 | 0.2 | 1.0 | 0.5 | 0.9 |
| AA-1 | 0.2 | 0.5 | 0.1 | 0.6 | 0.3 | 0.5 |
| AA-2 | * | -- | 0.2 | 1.0 | 0.2 | 0.4 |
| AA-3 | 1.2 | 3.2 | 1.4 | 7.3 | 2.6 | 4.6 |
| AA-4 | 0.3 | 0.8 | 0.2 | 1.0 | 0.5 | 0.9 |
| SA-1 | 1.4 | 3.8 | 1.2 | 6.2 | 2.6 | 4.6 |
| SA-2 | 2.2 | 6.0 | 2.2 | 11.4 | 4.4 | 7.8 |
| SA-3 | 3.8 | 10.4 | 1.0 | 5.2 | 4.8 | 8.6 |
| SA-4 | 5.6 | 15.3 | 1.0 | 5.2 | 6.6 | 11.8 |
| SA-6 | 0.9 | 2.4 | 0.3 | 1.6 | 1.2 | 2.1 |
| SA-7 | 0.9 | 2.4 | 0.1 | 0.6 | 1.0 | 1.8 |
| TOTAL | 36.9 | 100.0 | 19.2 | 100.0 | 55.1 | 100.0 |

* Less than 50 million dollars.